CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

MEMORANDUM

TO: **John Robertus**

FROM: **Hashim Navrozali, WRCE**
SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

DATE: **November 4, 2004**

SUBJECT: **DUKE ENERGY SOUTH BAY, LLC, SOUTH BAY POWER PLANT RESPONSE TO COMMENTS REGARDING TENTATIVE ORDER NO. R9-2004-015**

The initial version of tentative Order No. R9-2004-0154 (NPDES Permit No. CA0101368) was made available for public comment on June 25, 2004. During its regularly scheduled meeting on September 8, 2004, the Regional Board heard oral public testimony regarding the initial version of tentative Order No. R9-2004-0154. The tentative Order was not considered for adoption by the Regional Board because a *Response to Comments* was not complete due to the large volume of written comments received on the tentative Order. During the meeting the Regional Board directed staff to make additional modifications to tentative Order No. R9-2004-054 and bring the tentative Order back for the Regional Board's consideration at its November 10, 2004 meeting.

Tentative Order No. R9-2004-0154 was revised to incorporate the recommendations made by the Regional Board at its September 8, 2004 meeting. The revised tentative Order was provided for public review and comment on October 8, 2004. The revised tentative Order was updated to address, where appropriate, oral and written comments received by the public and resource agencies on the initial version of the tentative Order. The deadline for written comments on the revised tentative Order was October 27, 2004.

Public comments received on the initial and revised versions of the tentative Order are addressed under this *Response to Comments* document.

The following comment letters and documents from interested parties were received regarding the ***initial version*** of tentative Order No. R9-2004-0154 (i.e. Comment letters A through L):

A. Duke Energy South Bay LLC, 1st letter, dated August 18, 2004

B. San Diego Bay Council (Bay Council), 1st letter, dated August 18, 2004. The Bay Council is a coalition of the following environmental organizations: Environmental Health Coalition (EHC); San Diego BayKeeper (BK), Surfrider Foundation (SR), San Diego Chapter; San Diego Chapter of the Sierra Club (Sierra Club); San Diego Audubon Society; Southwest Interpretive Association. The Bay Council correspondence, *San Diego Bay Council Comments and Recommendations on Tentative Order No. R9-2004-0154 for Duke Energy, LLC, South Bay Power Plant* included two supplemental reports: 1) *Notes on South Bay Power Plant 316(a) & (b)* by Pisces Conservation Ltd., July 29, 2004; and 2) *Recommended Options for Maximum Water Temperature Limits and Minimum Dissolved Oxygen Limits at a Compliance Point for Discharges from the South*

Bay Power Plant in San Diego Bay, Necessary to Protect Beneficial Uses by Dr. Richard Ford, April 2003 and appendices.

C. U.S. EPA, Region 9, 1st letter, dated August 18, 2004

D. California Department of Fish and Game, letter dated August 31, 2004

E. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, letter dated August 31, 2004

F. California Independent System Operator, letter dated September 2, 2004

G. Utility Consumers' Action Network, letter dated September 3, 2004

H. California Lieutenant Governor Cruz Bustamante, letter dated August 11, 2004

I. Councilmember Donna Frye, City of San Diego, letter dated August 11, 2004

J. Duke Energy South Bay LLC, 2nd letter, dated September 15, 2004

K. San Diego Bay Council, 2nd letter, received on September 15, 2004

L. U.S. EPA, Region 9, 2nd letter, dated September 29, 2004

The following comment letters and documents from interested parties were received regarding the ***revised version*** of tentative Order No. R9-2004-0154 (i.e. Comment letters M through P):

M. Duke Energy South Bay LLC, letter dated October 27, 2004

N. San Diego Bay Council, letter dated October 27, 2004

O. San Diego Gas and Electric (SDG&E), letter dated October 25, 2004

P. San Diego Unified Port District, letter dated October 27, 2004

The identification of the comments in this document attempted to follow the format in the comment letters. In this document the comments received are paraphrased. Copies or paraphrases of the concerns listed in each of the letters and staff's responses are provided below. The original letters should be reviewed to ensure that the reader understands the comments and to ensure that the copied or summarized comments are accurate.

The Regional Board's *Responses to Comments* for letters and documents received on *initial version* (i.e. version presented at the September 8, 2004 Regional Board meeting) of tentative Order No. R9-2004-0154 (Addressing Comment Letters A through L)

A. First Letter from Duke Energy dated August 18, 2004

Comment A1: **Effluent Limitations for Copper**

The tentative Order has new water-quality based effluent limitations (WQBEL) for copper that becomes effective immediately. Immediate compliance with the WQBEL is infeasible. The adoption of the tentative Order should be delayed until a satisfactory alternative as provided for by the Implementation Policy, can be agreed upon. If a delay in the adoption of the tentative Order is not possible, a compliance schedule of up to 5 years should be allowed where immediate compliance is not feasible.

Response A1: The Regional Board agrees that immediate compliance with the copper WQBEL may be infeasible since that would require major upgrades to the condenser tubes of the power plant or installation of treatment technologies. The revised tentative Order includes a three-year time schedule for Duke Energy to comply with its CTR limitations for copper. Duke Energy will be required to develop and implement a workplan for source control, pollutant minimization, waste treatment, or other measures to control copper in its discharge. The workplan may also include proposals to conduct Water Effect Ratio or translator studies that could be used to develop site-specific objectives for total recoverable copper in south San Diego Bay.

The workplan will estimate the concentration and mass of copper that will be reduced in the discharge due to the proposed measures. Duke Energy will be provided 12 months to develop the workplan. Duke Energy will be required to fully implement the workplan and comply with its final CTR limitations for copper no later than 36 months after adoption of the Order.

Order No. R9-2004-0154 includes interim limitations for copper that will remain in effect until the facility is subject to the final CTR limitations, 36 months after adoption of the Order. The interim limitation requires the maximum daily concentration of copper in the discharge to not exceed the concentration of copper in the intake water by more than 2.5 µg/L. This interim limitation was based on best professional judgment (BPJ) in conjunction with historical data that shows that the concentration of copper in the discharge may exceed that in the intake by as much as 2 µg/l.

Comment A2: **<u>Entrainment of Discharge Plume</u>**
The Fact Sheet references that the discharge plume is entrained in the intake water and that such an effect causes a perpetual increase in the concentration of pollutants (including copper) added to the discharge. The increase in copper concentrations due to entrainment of the discharge plume is actually very minimal and has been overstated. The Regional Board should therefore not deny intake credits to Duke Energy for copper, simply based on entrainment effects.

Response A2: Duke Energy cannot be granted intake credits because it does not fully meet the requirements of Section 1.4.4 (*Intake Credits*) of the Implementation Policy.

According to Section 1.4.4 (*Intake Credits*), the Regional Board may establish intake credits by allowing a facility to discharge a mass and concentration of a pollutant that is no greater than the mass and concentration found in the facility's intake water.

The CTR copper monitoring conducted by Duke Energy at SBPP in April 2003, shows that the copper concentrations added by SBPP to the discharge at times exceed the concentrations of copper in the intake. The SBPP does not fully meet the requirements of Section 1.4.4 and therefore does not qualify for intake credits.

Comment A3: **<u>Relocation of the Thermal Discharge Limit Compliance Point</u>**
The tentative Order includes a requirement to relocate the thermal discharge compliance point to the property line by the expiration date of the permit. The tentative Order and Fact Sheet provides two reasons for this change. First the Regional Board's desire to have one compliance point at the property line. Secondly, the belief that Duke Energy is not in full compliance with Section 316(a). Either of these reasons does not provide justification for the relocation of the compliance point. Duke Energy takes strong exception to the assertions that the SBPP is out of compliance with Section 316(a) of the federal Clean Water Act.

Response A3: The primary purpose to require compliance of thermal effluent limitations at the SBPP property line was to ensure that the power plant fully complies with federal NPDES regulations 40 CFR 122.45 and 40 CFR 122.41(j)(1).

Pursuant to 40 CFR 122.45 of the NPDES regulations, effluent limitations must be met at point of discharge, prior to the effluent entering the receiving waters of the United States. Pursuant to 40 CFR 122.41(j)(1) of the NPDES regulations the samples and measurements taken for the purpose of monitoring shall also be representative of the monitoring activity.

Since the discharge channel is a part of south San Diego Bay and is considered receiving waters of the United States, Duke Energy must comply

with all effluent limitations (including thermal limitations) at its property line (i.e. prior to the effluent entering the discharge channel) instead of 1,000 feet downstream of property line. Furthermore, the property line is closer to the point of discharge and provides for more representative monitoring prior to any mixing with receiving waters.

A more detailed explanation for the relocation of the thermal effluent limitations compliance point has been included in the revised tentative Order and Fact Sheet.

Comment A4: **Special Sunset Study**

The tentative Order includes a requirement to conduct a Special Sunset Study to evaluate the impacts of any proposed changes in the volume or temperature of the discharge on the beneficial uses of south San Diego Bay. This implies that the Regional Board is considering the imposition of post-shutdown regulatory requirements after SBPP's discharges cease, specifically, that Duke Energy will be responsible for mitigating the loss of beneficial effects once the power plant ceases to operate. There is no legal basis for this proposition, since neither the California Water Code nor the federal Clean Water Act allow the Regional Board to compel a discharger to continue discharging, to control ambient water quality after the authority for a particular regulated discharge ceases, or to implement mitigation measures upon cessation of a discharge.

Response A4: The Regional Board agrees with the request to remove requirements of a Special Sunset Study. The revised tentative Order does not include requirements for a Special Sunset Study.

Comment A5: **Increased and Specific Monitoring Requirements**

Despite substantial reductions in the toxicity of the SBPP discharge, the tentative Order contains significant increases in both effluent and receiving water monitoring. Some of the increased monitoring requirements are driven by requirements in the Basin Plan and Implementation Policy, however many of the increased requirements are unwarranted and need to be scaled back.

The tentative Order also requires some monitoring to be performed to coincide with the period of the day when the power plant is operating at highest loads. Aside from thermal loading, no correlation can be made between the typical power plant generation cycle and the characteristics of the power plant discharge. Furthermore, sampling of the discharge is already limited to periods based on the tidal cycle. Adding additional temporal restrictions on sampling will only serve to create instances where Duke Energy is physically unable to collect discharge samples in the specified time period. Since they are not practical and add no value, these restrictions on sampling should be eliminated.

Response A5: The additional monitoring is necessary to fully evaluate and understand the impacts of the SBPP discharge on south San Diego Bay, particularly the discharge channel.

Following is summary of the significant monitoring changes incorporated in the tentative Order and the rationale for these changes:

a. Monthly effluent, intake, and receiving water monitoring for total recoverable copper have been included in the tentative Order to enable demonstration of compliance with the new CTR effluent limitations for copper.

b. Monthly effluent and receiving water monitoring for other priority metals (cadmium, lead, mercury, arsenic, chromium, silver, and zinc) have been added to the MRP, in order to comply with CTR and SIP provisions. Although the Reasonable Potential Analysis (RPA) conducted for these metals suggests that effluent limitations are not required, the RPA was based on just one sampling event. Since these metals have periodically been found in the discharge in detectable quantities, the Regional Board determines that it is necessary to closely monitor the seasonal variation in the concentrations of these metals in the discharge over an annual cycle and periodically conduct an RPA. If an RPA conducted in the future indicate that effluent limitations are needed for these metals, the NPDES permit will be amended to incorporate these limitations.

c. Monthly effluent dissolved oxygen (DO) monitoring has been added to the tentative Order, since there is no adequate historical data available for variations in DO in the SBPP effluent over an annual cycle. The DO data from the discharge, at station S2 (i.e. property line), will be compared to DO levels in the receiving water stations to determine the extent of impact of the thermal effluent from SBPP to DO levels in south San Diego Bay. After adequate data has been collected a DO discharge limitation may be recommended.

d. Order No. 96-05 required total chlorine residual in the effluent to be monitored only twice a month. Because of the intermittent nature of chlorination cycles (i.e. 6 cycles per day, up to 80 minutes per cycle) at SBPP and the large volume of discharge (i.e. 601.13 MGD), this monitoring regime is inadequate in verifying whether the power plant complies with the effluent limitation for total residual chlorine. The tentative Order therefore increases the monitoring frequency for total residual chlorine from twice a month to weekly. Although, Order No. 96-05 has a receiving water limitation for total residual chlorine, it does not require any receiving water monitoring. The tentative Order corrects this inconsistency by requiring Duke Energy to monitor for receiving water

levels of total residual chlorine monitoring at two stations in the SBPP discharge channel, that are closest to the property line.

e. Order No. 96-05 required bioassay tests for acute and chronic toxicity in the effluent and intake to be conducted on a quarterly basis. Because of the large volume of the discharge and possible seasonal variations in discharge water toxicity, quarterly toxicity monitoring is inadequate. Furthermore, the very sensitive nature of south San Diego Bay and shallow, low circulatory conditions prevailing in south San Diego Bay, make it very susceptible to toxicity effects. This warrants more frequent monitoring of toxicity. The tentative Order has therefore increased the monitoring frequency for acute and chronic toxicity from a quarterly to monthly basis. The revised tentative Order also requires intake water monitoring for total residual chlorine.

f. The revised tentative Order requires all applicable intake water, effluent, and receiving water monitoring for dissolved oxygen, total suspended solids, and transparency to be conducted between noon and 6:00 p.m. The tentative Order also requires effluent and receiving water monitoring for total chlorine residual to be conducted between noon and 6:00 p.m. These time periods will enable monitoring to be conducted when the power plant is operating at the highest loads and dispensing higher levels of heat to the discharge. The temperatures in the SBPP discharge channel are expected to be highest during these hours and conditions most stressful. Higher temperatures in the discharge generated in the peak operating hours of the power plant, generally correspond to lower DO levels. As required by the tentative Order, it is appropriate to conduct monitoring for DO when levels of DO are expected to be at their lowest. Furthermore, concentration levels of other parameters such as total suspended solids and transparency may also be impacted during the peak hours, when the power plant is discharging higher volumes of water at higher corresponding velocities.

g. Order No. 96-05 required monthly intake and receiving water monitoring for DO to be conducted between noon and 5:00 p.m. The receiving water monitoring includes stations located in the discharge channel, including station E7 (close to the discharge sampling location at the property line). Duke Energy has apparently had no problem in the past five years, conducting this monitoring. We believe that the additional monitoring for total suspended solids, transparency, and total residual chlorine during the peak operating hours is appropriate and logistically possible.

B. First Letter from San Diego Bay Council (Bay Council) dated August 18, 2004

General Comments on Tentative Order

Comment B1: **On-going Bay Degradation Necessitates Adoption of a Permit for SBPP that Will Protect the Bay Now, Not Later.**
With this permit renewal, the Board should send a clear message that Duke Energy's SBPP should either re-invent itself or operate in a manner that no longer impacts the Bay. Duke needs to be given clear, stringent, and direct requirements to all aspects of monitoring, compliance, and operations.

Response B1: The tentative Order recognizes the impacts of the discharge and the intake. The tentative Order sets the compliance point for effluent limitations, including temperature, at the property line, requires the discharger to demonstrate compliance with the new CWA Section 316(b) *Phase II* rule, and specifies an effluent limitation for copper pursuant to the *California Toxics Rule* and the *State Implementation Policy*. The tentative Order also requires more frequent monitoring.

Comment B2: **Duke Energy Studies Fail to Demonstrate Compliance with CWA Sections 316 (a) and (b)**
The Duke Energy studies do not support a finding of compliance under Section 316(a) due to issues related to dissolved oxygen, loss of eelgrass habitat, and lower diversity or loss of species of benthic invertebrates. The Board should adopt more stringent and protective limits for dissolved oxygen and temperature.

The tentative Order is allowing the SBPP to operate for another five years "as-is", requiring Duke only to complete more studies. Bay Council believes that the Duke Studies provide enough data and information to reach a finding of non-compliance with old and new 316(b) regulations.

Response B2: The revised tentative Order includes Findings that acknowledge that the SBPP discharge has impaired the Beneficial Uses of the south San Diego, in particular the SBPP discharge channel. It is evident that the impacts on Beneficial Uses because of the discharge of once-through-cooling water cannot be eliminated except through termination of the discharge. The adverse impacts are due to the individual and combined effects of the elevated temperature of the discharge and the high volume and velocity of the discharge (redistribution of turbidity).

The revised tentative Order also includes Findings that state that Duke Energy will be required to take measures to abate the detrimental impacts of the SBPP discharge to the discharge channel. The Findings also state that Duke Energy will be required to propose measures to restore the Beneficial Uses of south San Diego Bay and to rehabilitate the damage

caused to the biological resources of the Bay from the operation of the power plant.

In an action separate from the adoption of the tentative Order, the Regional Board will consider the issuance of a CWC Section 13267 letter to Duke Energy directing it to provide a Workplan that proposes specific abatement and restoration measures. Duke Energy will be responsible for the financial costs associated with the implementation of the measures. Duke Energy will be required to develop and implement the abatement and restoration Workplan in consultation with representatives of the USEPA, Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), RWQCB/SWRCB, and the California Coastal Commission.

Pursuant to NPDES regulations 40 CFR 122.45 and CFR 122.41(j)(1)), effluent limitations and the point of compliance need to be established at the point of discharge. The Regional Board recognizes that the requirement to relocate the discharge temperature compliance point to the SBPP property line in order to comply with NPDES regulations will provide important benefits. In particular, this relocation of compliance point will help in abating some of the detrimental thermal impacts to the discharge channel.

Pursuant to the revised tentative Order Duke Energy will have to comply with its Delta T thermal effluent limitations at the property line no later than three years after adoption of the Order (the initial version of the tentative Order allowed Duke Energy five years to implement this change). The Regional Board recognizes that SBPP is currently under a Reliability Must-Run (RMR) contract with the California Independent System Operator (ISO) and curtailing operations at the power plant may cause Duke Energy to violate its RMR contract. Furthermore, any reductions in SBPP's power generation output may directly impact the ability of the ISO controlled electric grid to meet the power needs of the San Diego area. For this reason, a compliance schedule of three years appears reasonable and will enable Duke Energy to modify its operations or take additional structural or control measures to comply with its Delta T thermal effluent limitations at the SBPP property line.

The change in monitoring location will eliminate any potential mixing or dilution zones for temperature and ensure that less heat is dispensed to the discharge channel. Since there is a direct correlation between DO levels in the discharge channel and temperature, less heat dispensed to the discharge channel will also provide conditions for higher DO levels. Higher DO levels and lower temperature regimes may positively impact the health and survivability of fish, benthic invertebrates, and eelgrass in the discharge channel. The workplan developed by Duke Energy (pursuant to the CWC Section 13267 letter that the Regional Board intends to issue) would, however, have to propose additional measures to

reduce the thermal impacts of the discharge on the marine resources of the discharge channel and to fully restore Beneficial Uses. The workplan would also have to propose measures to abate the impacts of the high velocity and volume of the discharge (redistribution of turbidity) on the discharge channel.

CWA Section 316(b) requires that the location, design, construction, and capacity of cooling water intake structures reflect the Best Technology Available (BTA) for minimizing adverse environmental impact. The U.S. EPA published a final *Phase II* rule [Section 125.94(a)] to implement Section 316(b) in February 2004. The final rule became effective September 7, 2004 and specifies the location, design, construction, and capacity standards for cooling water intake structures.

The 2003 studies conducted by Duke Energy confirmed that the impingement and entrainment losses are significant and that Duke Energy is not in compliance with the *Phase II* rule. The revised tentative Order includes a Finding that states that Duke Energy does not meet the impingement and entrainment performance standards outlined in the *Phase II* rule. The revised tentative Order also includes a Finding that states that the losses of larval and adult fish populations due to entrainment in the SBPP constitute a significant adverse environmental impact.

The *Phase II* rule allows the discharger up to four years to demonstrate compliance. The provisions, compliance requirements, and compliance schedules to demonstrate compliance with the *Phase II* rule have been incorporated into the revised tentative Order. Duke Energy is required to perform and implement a *Comprehensive Demonstration Study* (Study) to characterize impingement mortality and entrainment, to describe the operation of the cooling water intake structures at SBPP, and to confirm that the technologies, operational measures, and/or restoration measures it has selected or installed, or will install, to meet one of the five compliance alternatives listed in Section 125.94(a) of the new rule.

The Study will also include implementation schedules for technological upgrades and/or restoration measures that would enable the facility to come into compliance with the rule. The revised tentative Order shortens the time allowed for Duke Energy to submit the Study to no later than 30 months after adoption of the Order (the initial version of the tentative Order allowed Duke Energy up to 42 months to submit the Study).

It is expected that the SBPP will fully implement these plans and demonstrate compliance with the *Phase II* rule performance standards during its subsequent five-year NPDES permit cycle (i.e. 2009 – 2014). It would not be feasible to require the power plant to make significant upgrades prior to the submittal of the Study. Therefore in the interim, it is appropriate for SBPP to continue operating in its current configuration.

Comment B3: **Duke Studies Fail to Demonstrate Compliance with old CWA Section 316 (b) Guidance**

The Pisces Conservation LTD report "Notes on the South Bay Power Plant 316(a) & (b) application" concluded that by continually removing and killing a wide variety of organisms the SBPP acts as a suppressor on the ecosystem resulting in an Adverse Environmental Impact, as defined in the old Section 316(b) guidance. Both the Duke Studies and the Pisces Report point out that there is a significant percentage loss of eelgrass and the loss of a large proportion of species of fish and larvae.

Response B3: See Response to Comment B2.

Comment B4: **SBPP Entrainment and Impingement Data Justifies Finding for Adverse Environmental Impact**

The Pisces Conservation LTD report "Notes on the South Bay Power Plant 316(a) & (b) application" concludes that the SBPP intake tends to kill and result in absolute damage to a large number of small animals and juveniles. This results in a gradual distortion of the ecosystem in the vicinity of the intake. The plant has the potential to reduce the local population by a significant amount due to impingement and entrainment mortalities, which can have a long-term impact on the south San Diego Bay populations.

Response B4: See Response to Comment B2.

Comment B5: **Significant Eelgrass Loss in South Bay Justifies Finding of Adverse Environmental Impact**

The tentative Order states that the operation of SBPP would preclude eelgrass from approximately 104 acres of south San Diego Bay. These losses would represent a significant percentage of 10% of the eelgrass habitat in the entire bay, as stated in the Pisces Conservation LTD report "Notes on the South Bay Power Plant 316(a) & (b) application." The report also states that other areas may be growing less well than they would without the effect of the power plant and the ramifications of this loss are complex and difficult to quantify.

Response B5: Comment noted. See Response to Comment B2.

Comment B6: **High Mortality Rates for Larval Fish Due to Entrainment and Impingement Justify a Finding of Adverse Environmental Impact**

Duke's entrainment data demonstrates that the SBPP results in a significant loss of production for species either by removal from the system or by organisms living and growing sub-optimally. The Duke Studies discount these losses under a theory of surplus production and conclude that the losses have no effect on the environment, thus SBPP is not in violation of 316 (b) regulations. The Pisces Conservation LTD report "Notes on the South Bay Power Plant 316(a) & (b)

application" contains conclusions that the theory of surplus production in this case is erroneous and has no relevance in nature where natural variability plays a central part in determining populations. The Board should consider the issues raised by the Pisces report and reevaluate the impact of the SBPP's cooling system on the high mortality rates for fish and larval species.

Response B6: See Response to Comment B2.

Comment B7: **<u>Dukes Studies Do Not Adequately Assess Indirect Adverse Environmental Impacts to Commercially Valuable Fish and Impacts to the Marine Ecosystem</u>**
The Pisces Conservation LTD report "Notes on the South Bay Power Plant 316(a) & (b) application" points out that the Duke studies on entrainment and impingement erroneously focused primarily on fish they designated to have commercial value but failed to consider other species lost with commercial value or those whose loss directly or indirectly impacts fish of commercial value. Bay Council believes that the Board should strongly consider the number and percentage loss of other species that may not have a direct commercial value in the market but provide the crucial support system for sustaining healthy populations of commercially valuable fish.

Response B7: Duke Energy may be required to address the losses of non-commercial species of fish as part of its *Comprehensive Demonstration Study* for compliance with the CWA Section 316(b) *Phase II* rule.

Comment B8: **<u>Duke Energy Studies do not Adequately Assess Adverse Environmental Impact to Benthos in the Bay</u>**
The Duke studies failed to examine whether the health of the benthos around the SBPP was impacting habitat in the vicinity of the plant. In the Pisces Conservation LTD report "Notes on the South Bay Power Plant 316(a) & (b) application" conclusions were made that the benthos is highly stressed around the SBPP. To fully assess the impact of the SBPP on the south Bay the Board should require additional seasonal, quarterly benthic invertebrate sampling in the MRP.

Response B8: The updated 316(a) studies conducted by Duke Energy commenced in July 2003 and continued through the summer of 2003. The impacts of the discharge on the benthic invertebrates were studied at time of year when the water temperature in the discharge channel is the highest and conditions most stressful. The impacts of the discharge on the benthic communities are expected to be most profound in the summer months compared to other times of the year.

As indicated in Response to Comment B2, the tentative Order requires Duke Energy to relocate the point of compliance for its thermal effluent

limitations to the SBPP property line. Furthermore, Duke Energy will also be required to implement additional abatement/restoration measures (pursuant to a CWC Section 13267 letter) to address the detrimental thermal and high volume and velocity impacts of the SBPP discharge. These actions should help in restoring the Beneficial Uses of the SBPP discharge channel and enhance the health and viability of benthic invertebrates. After Duke Energy implements the required measures, the Regional Board may consider implementing additional monitoring of benthic communities to evaluate the impact of these measures.

Comment B9: **SBPP Fails EPA Steps for Ensuring Compliance with CWA Section 316(b) When a Finding of an Adverse Environmental Impact is Made**

Bay Council is seriously concerned that Duke has not taken all the available steps necessary to minimize the impact of the plant to comply with the requirements of CWA Section 316(b) and to fully divulge the impacts of entrainment and impingement. A reduction of cooling water used or a fundamental change in the intake configuration is the only ways that Duke can comply with these requirements. Duke has also failed to sufficiently assess alternative technologies that may be available. Bay Council requests that the Board take a strong stance on requiring that Duke install new Best Available Technology on SBPP to significantly reduce mortality of impinged and entrained organisms.

Response B9: The requirement in the tentative Order for Duke Energy to perform and implement a *Comprehensive Demonstration Study* for the CWA Section 316(b) *Phase II* rule will ensure that it meets the BTA to reduce impacts of entrainment and impingement (see Response to Comment B2).

Comment B10: **Duke's Technology Assessment is Insufficient to Comply With CWA Section 316(b)**

Duke must assess the economic feasibility of technology options on a short- and long-term range instead of assuming the plant closure in 2009, which precludes any substantial technological upgrades or retrofits. The Duke Studies fail to demonstrate any in-depth feasibility analysis beyond 2009. Bay Council requests that the Board make a finding in the Fact Sheet that states that although the SBPP lease may end in 2009, due to "Reliability Must-Run" status designated by the California Independent Operator System, there is a possibility that the plant may operate beyond that date.

Response B10: The implementation of the *Comprehensive Demonstration Study* (including technology upgrade plans and/or restoration plans) for the CWA Section 316(b) *Phase II* rule may continue beyond 2009. The Fact Sheet has been modified to state that amortization calculations for purposes of determining cost feasibility of technological upgrades of intake structures at the SBPP (to be addressed in the *Comprehensive*

Demonstration Study of the *Phase II rule*) shall be based on a 20-year plant life (also see Response to Comment B2).

Comment B11: **<u>Regional Board Should Include Dissolved Oxygen & Temperature Limits That Are Protective of the Beneficial Uses in the Permit.</u> Recommendation to change the DO and temperature requirements in the tentative Order based on a report by Richard F. Ford, Ph.D. that was based on CWA Section 316(a) and species-specific laboratory and field studies. To assess impacts of cooling water effluent Dr. Ford recommends a quarterly marine ecological monitoring program. He also recommended varying monthly minimum DO limitations in the receiving water, with the lowest at 5.0 mg/l (taken from the Basin Plan) during the summer month and the highest at 6.7 mg/l in February.**

Response B11: The Regional Board's review of recent ambient sampling data for San Diego Bay indicates that the Bay itself does not meet the DO receiving water limitations recommended by Dr. Ford or the Basin Plan's DO water quality objectives for inland surface waters.

The Basin Plan specifies the following water quality objective for DO in inland surface waters:

DO levels shall not be less than 5.0 mg/l in inland surface waters with designated MARINE or WARM beneficial uses. The annual mean DO concentration shall not be less than 7 mg/l more than 10% of the time.

A review of DO sampling data for the year 2001, compiled by the San Diego Unified Port District *(Port of San Diego, Bay-Wide Water Quality Monitoring Program, 2001),* for five stations dispersed throughout San Diego Bay shows that the ambient DO levels in San Diego Bay do not meet the above Basin Plan objectives. The annual mean DO at only one station, that was close to the open ocean waters and the mouth of north San Diego Bay, exceeds 7.0 mg/l (i.e. 7.02 mg/l at Station 1, Shelter Island). The annual mean DO values at the other four stations, in the inner Bay locations, are in the 5.57-6.32 mg/l range.

An analysis of the 2001 weekly mean DO sampling data, obtained from the Port of San Diego, for the station located in south San Diego Bay (i.e. Station 5, at the mouth of Chula Vista Marina; to the north of the SBPP intake channel) showed that 20.5 percent of ambient DO values were less than 5.0 mg/l and 94.8 percent of ambient DO values were less than 7.0 mg/l. An analysis of DO sampling data taken at half hour intervals during the summer of 2001 (May through October) at Station 5, showed that 28.5 percent of ambient DO values were less than 5.0 mg/l and 98.2 percent of ambient DO values were less than 7.0 mg/l.

As indicated in Response to Comment B2, the relocation of the point of compliance for thermal effluent limitations (to the SBPP property line) in conjunction with a requirement for Duke Energy to implement additional abatement/restoration measures (pursuant to a CWC Section 13267 letter) should be instrumental in restoring the Beneficial Uses of the SBPP discharge channel and addressing the detrimental thermal and high volume and velocity impacts of discharge. This approach will also provide Duke Energy adequate time to make operational and/or structural changes and preserve its RMR contract with the ISO.

As indicated in Response to Comment B2, the revised tentative Order requires Duke Energy to relocate its point of compliance for thermal effluent limitations from Station S1 (1,000 feet downstream of discharge) to the SBPP property line (in order to comply with NPDES regulations), no later than three years after adoption of the Order. This relocation of the thermal effluent limitations compliance point will provide for important secondary benefits. In particular, it will force Duke Energy to lower the amount of heat in its discharge and will help in abating some of the detrimental thermal impacts to the discharge channel.

As discussed in Response to Comment B2, the Regional Board also intends to issue a CWC Section 13267 letter, directing Duke Energy to propose and implement a workplan that addresses additional abatement and restoration measures. Duke Energy will be responsible for the financial costs associated with the implementation of the measures. Duke Energy will be required to develop and implement the abatement and restoration workplan in consultation with representatives of various resource and regulatory agencies.

Comment B12: **Dr. Ford's Report Provides Additional Insight into SBPP Adverse Environmental Impacts Caused by Effluent with Elevated Temperature and Reduced Dissolved Oxygen**
Results of species-specific studies are summarized that provide information to support Bay Council's recommendations regarding DO and temperature limitations.

Response B12: Comment noted.

Comment B13: **Tentative Order Improperly Concludes that Dissolved Oxygen Requirements of the Basin Plan Do Not Apply to SBPP**
The Basin Plan Dissolved Oxygen limit of 5.0 mg/l for inland surface waters with designated marine beneficial uses should apply to San Diego Bay. Basin Plan states that the water quality objectives for DO apply to "all inland surface waters, enclosed bays, and coastal lagoons and ground waters".

Response B13: Although San Diego Bay is designated with a MARINE beneficial, it is not an 'inland surface water'. The Basin Plan does not explicitly

designate a DO objective for San Diego Bay. Therefore the Basin Plan DO objective is not directly applicable to San Diego Bay. Furthermore, San Diego Bay itself does not meet the Basin Plan DO objectives for inland surface waters, based on recent ambient DO sampling data. See Response to Comment B11.

Specific Comments on Tentative Order

Comment B14: **The Tentative Order does not cite intake pump nameplate flow capacities. The previous Order, Order No. 96-05, had a rating of 197 mgd for Unit 4. Attachment 1 of the tentative Order has flow rating of 190 mgd for Unit 4. Bay Council requests that the tentative Order explain the difference in the flow rates for Unit 4.**

Response B14: The maximum flow rate from Unit 4 is 197 MGD (based on pump rating of 136,800 gpm and assuming a 24 hour/day operating schedule). Attachment 1 of the Fact Sheet will be corrected to reflect a Unit 4 flow rate of 197 MGD.

Comment B15: **The waiver of the prohibition of naturally-occurring material (vegetation, dead animals or fish) that is drawn into the once-through cooling water system raises several concerns. The material in the return trough attracts birds and fishes and other aquatic life to the discharge channel and modifies the natural feeding behavior and potentially the distribution of and abundance of species. Bay Council requests that the prohibition of naturally occurring material that is drawn into the once-through cooling system be reinstated in the tentative Order.**

Response B15: The waver of this prohibition was agreed upon during settlement negotiations for Order No. 96-05 between the SWRCB, SDG&E, and the Environmental Health Coalition (EHC) in 1997. The waver of this prohibition was subsequently adopted in Addendum No. 3 to Order No. 96-05 (in October 1998). The prohibition is consistent with the previous NPDES permits, which was extensively reviewed. The return of naturally occurring materials back to the Bay should not have an impact to water quality.

Comment B16: **Bay Council is concerned that multi-unit chlorination is permitted and requests that the tentative Order justify why simultaneous multi-chlorination is permitted under 40 CFR 423.**

Response B16: The Regional Board agrees that multi-unit chlorination is not justified. The revised tentative Order prohibits the simultaneous chlorination of multiple Units at SBPP.

Comment B17: **Page 7, Paragraph B. Effluent Limitations 1(a) Cooling Water Discharge. Board should require that the temperature of the cooling**

water requirement be replaced by monthly maximum temperature as shown below (based on Dr. Ford's recommendation):

Month	Maximum Temperature (F)
January	**62**
February	**62**
March	**67**
April	**68**
May	**72**
June	**76**
July	**78**
August	**80**
September	**78**
October	**73**
November	**68**
December	**67**

Response B17: As discussed in Responses to Comments B2 and B11, the existing once-through cooling water thermal limitations (i.e. average daily and instantaneous maximum Delta T limitations of 15 and 25 degrees F respectively) will continue to be enforced. Duke Energy will, however, be required to implement additional measures (i.e. relocation of thermal limitations effluent compliance point to SBPP property line and implementation of additional abatement/restoration measures) that will help in restoring the Beneficial Uses of south San Diego Bay impacted by the SBPP discharge.

Comment B18: Effluent Limitation B.1(d). The Board should adopt the SWRCB Ocean Plan method for setting the total residual chlorine limit to be used, as it is more protective of the aquatic life.

Response B18: The Ocean Plan limitations are not applicable to enclosed bays such as San Diego Bay. The total chlorine residual limitation in the tentative Order for once-through cooling water is the lower limit of the BAT effluent limitation established by the EPA (i.e. 200 µg/l) or a calculated water quality based limitation derived from empirical methods evaluating the effects of varying chlorine concentrations and time of exposure on the marine species and organisms in the San Diego Bay. The regression equation for the water quality based-limitation was developed during settlement negotiations for Order No. 96-05 between the SWRCB, SDG&E, and the Environmental Health Coalition (EHC) in 1997. The total chlorine residual equation was subsequently adopted in Addendum No. 3 to Order No. 96-05 (in October 1998).

The SBPP uses a chlorination system that injects liquid sodium hypochlorite into the pipes immediately upstream of the circulating water pumps for each

Unit. This results in total residual chlorine in the discharge. This sodium hypochlorite solution is used intermittently in the cooling water system when the Unit is in operation to minimize formation of algae and slime that may collect in the tubes of the condenser. Sodium hypochlorite is injected upstream of each Unit every four hours on a timed cycle each day. During a 24 hour period, each Unit is subject to up to 6 chlorination cycles a day. During the chlorination cycle, each Unit is chlorinated for 20 minutes. The injection of chlorine is staggered so that only one Unit at a time is chlorinated. The revised tentative Order prohibits simultaneous chlorination of multiple Units. The combined cycle time when all four Units are operating does not exceed 80 minutes. The intermittent nature of the chlorination process allows the total residual chlorine to dissipate and reduce impacts to the receiving waters of the Bay.

The total residual chlorine limitation in the tentative Order is consistent with the limitation used in Order No. 96-05. The limitation is a function of the duration of uninterrupted chlorine discharge in minutes. A longer discharge time would render a lower (i.e. more stringent) effluent limitation for total residual chlorine. The effluent limitation for total residual chlorine when only one Unit is operating (i.e. a 20 minute total discharge time) during a chlorination cycle is 144 µg/l. The effluent limitation for total residual chlorine residual when all four Units are operating (i.e. a 80 minute total discharge time) during a chlorination cycle is 85 µg/l. A more complete explanation of the total chlorine residual limitation is provided in the Fact Sheet pp. 11 & 43 (of the revised tentative Order).

The revised tentative Monitoring and Reporting Program (MRP) requires concurrent sampling of total residual chlorine at the intake and discharge locations. In addition, two receiving water monitoring stations in the discharge channel will also be sampled for total residual chlorine. This will enable comparison of ambient total residual chlorine in south San Diego Bay with effluent concentrations. The Regional Board will be analyzing this data and may consider changes to the total residual chlorine limitation in the future.

Comment B19: Cooling water intake structure specifications fails to specify maximum daily intake flow. Correct to include intake flow.

Response B19: The cooling water intake structures will be evaluated, and flow rate and velocity limitations may be developed pursuant to the recently adopted Section 316(b) *Phase II* rule. The tentative Order requires Duke Energy to submit a *Comprehensive Demonstration Study* pursuant to the recently adopted Section 316(b) *Phase II* rule. As part of the Study, Duke Energy may be required to evaluate its intake structures and propose appropriate flows and velocity limitations to comply with the entrainment reduction standards of the *Phase II* rule. The Order would be amended at a later

date to incorporate any new intake flow or velocity limitations and associated monitoring requirements.

Comment B20: **Tentative Order Receiving Water Limitations. The Board should require dissolved oxygen specifications for receiving waters by applying the Basin Plan water quality objective for dissolved oxygen; i.e. the dissolved oxygen levels shall not be less than 5.0 mg/L and the annual mean dissolved oxygen concentration shall not be less than 7 mg/L more than 10% of the time. Set the minimum monthly dissolved oxygen requirements as shown below:**

Month	Minimum dissolved oxygen (mg/L)
January	8.0
February	7.6
March	7.5
April	6.4
May	6.5
June	6.7
July	6.5
August	6.2
September	5.0
October	5.9
November	7.1
December	7.0

Response B20: Dr. Ford's recommended DO receiving water limitations for San Diego Bay (based on the Basin Plan water quality objectives for inland surface waters) are unachievable since the ambient DO concentration at various locations in San Diego Bay consistently exceed these values. See Response to Comment B11.

Comment B21: **Page 11, Section D.2, Receiving Water Limitations. The Board should require that the State Ocean Plan be used for the total residual chlorine limitation for intermittent discharges.**

Response B21: The total residual chlorine limitation in the tentative Order is appropriate. See Response to Comment B18.

Specific Comments on Tentative Monitoring and Reporting Program

Comment B22: **The Board should require monitoring to measure the water velocity at the intake screens at maximum load period and at low tide.**

Response B22: See Response to Comment B19.

Comment B23: **The Board should require monitoring measurements of intake flows at each intake pipe and obtain total intake flow.**

Response B23: See Response to Comment B19.

Comment B24: **Dissolved oxygen monitoring is inadequate. The Board should require that samples be taken of influent and effluent within the same time period and at 1800 hours to measure the diurnal variation of the influent.**

Response B24: The 2003 Section 316(a) study conducted by Duke Energy extensively evaluated the diurnal variation of DO in the effluent, influent, and at ambient locations in south San Diego Bay. The DO measurements were conducted during the summer months of 2003 when the lowest day-time levels of DO are expected. The study compiled adequate data to enable a comparison of the representative variation in diurnal DO concentrations at the intake and effluent stations. Additional monitoring to determine diurnal variations in DO is not needed.

Comment B25: Compliance with thermal effluent limitations at SBPP property line (Station S2) should be required immediately. The Board should adopt a Cease and Desists Order if the power plant cannot immediately comply with the S2 location monitoring.

Response B25: See Response to Comment B2. The revised tentative Order has shortened the time required for Duke Energy to comply with its thermal limitations at the property line from five years (as indicated in the initial version of the tentative Order) to three years. Immediate compliance at the property line could cause Duke Energy to severely curtail its power generation operations and violate its RMR contract with the ISO.

Comment B26: **The channel flow measurement at S2 is not accurate because the dimensions of the channel are not known. The Board should require that flow meters be located at each discharge pipe to obtain the total flow and an assessment of effluent measurement accuracies be conducted.**

Response B26: The workplan that Duke Energy is required to develop and implement to comply with its thermal effluent limitations at the property line (Station S2) would have to include the proposed measures Duke Energy will be taking to obtain accurate and representative flows and temperature measurements at the property line. As part of the workplan, Duke Energy may propose to install flow meters at each discharge pipe and use modeling to obtain a representative combined temperature and flow value at the property line. Duke Energy would also have to provide engineering calculations for flow rates and measurements of associated parameters (such as property line cross section and specification of individual

discharge pipes etc). The workplan would have to be reviewed and approved by the Regional Board prior to being implemented.

Comment B27: **The Board should require Receiving Waters diurnal dissolved oxygen measurements be monitored. The current monitoring requirement at 5 p.m. is inadequate to measures daily fluctuations and the typical low dissolved oxygen levels in the early morning and late afternoon.**

Response B27: See Response to Comment B24. The DO levels during the day hours are representative of conditions when the power plant is operating at peak loads and distributing highest amount of heat loads to the discharge. Higher temperatures in the discharge generally contribute to a depression in DO levels. In effect, during the day hours, the power plant is having a more profound impact on the reduction of DO (compared to night hours). The power plant is usually idling or operating at minimum capacity during night and early morning hours. The low DO levels encountered in the discharge channel during these hours is reflective of the low natural productivity of DO (due to the lack of photosynthesis processes in the night hours) and is not directly attributable to the SBPP discharge.

Comment B28: **Receiving Water Monitoring does not specify the time of day to measure water temperature. The temperature should be measured at noon or mid-afternoon.**

Response B28: The revised MRP (see Endnotes 4 and 12) indicates that all receiving water monitoring for DO, transparency, and temperature shall be conducted between the hours of 12:00 p.m. to 6:00 p.m.

Comment B29: **The Board should require that the toxicity testing be conducted with water temperature maintained at the temperature of the ambient waters (i.e. to simulate the elevated temperatures in the discharge channel).**

Response B29: The bioassay methods and protocols developed or approved by the EPA for toxicity testing require test water samples to adhere to specific laboratory conditions for temperature, dissolved oxygen, and other parameters. Pursuant to NPDES regulation, all test methods contained in NPDES permits must conform with approved EPA protocols and methods, including 40 CFR 136. Currently there are no approved EPA protocols for elevated temperature toxicity monitoring in 40 CFR 136. If specific tests are developed and approved by the EPA in the future that address the effects of elevated temperatures on toxicity tests, the Regional Board may consider modifying the toxicity test methods in the Order.

Comment B30: **The Board should require that the chemical characteristics of the receiving water be monitored for compliance with the limitations on page 10 of the tentative Order, i.e. pH, sulfide, un-ionized ammonia, and organic materials in the sediments (total organic carbon).**

Response B30: The receiving water monitoring in the tentative MRP was developed to monitor for constituents in south San Diego Bay that could potentially be discharged or impacted by the discharges from SBPP. These include copper and various priority metals, temperature, dissolved oxygen, total residual chlorine, and transparency. These constituents are monitored at 12 stations dispersed around San Diego Bay. In addition, parameters such as pH, total suspended solids, acute and chronic toxicity, are monitored at the intake water location. The SBPP discharge does not contain BOD, un-ionized ammonia, sulfide, and total organic carbon in quantities that would significantly impact the receiving waters of south San Diego Bay. Receiving water monitoring for these pollutants is not necessary.

Comment B31: The Board should require that Chlorophyll (a), total suspended solids, and BOD be monitored at the discharge channel and intake channel to assure compliance with the chemical characteristics of the receiving waters.

Response B31: See response to Comment B30 above.

Comment B32: Describe the method and instrumentation used to measure effluent flow.

Response B32: Each Unit at the SBPP utilizes two vertical cooling water pumps to draw Bay water from the intake structures and route it to the condensers. The pumps are constant flow and operate at around 400 rpm. The daily effluent flow from each pump is estimated by the multiplying the flow rate of the pump (in gpm) by the minutes of operation during a 24-hour period. The SBPP currently does not employ flow meters at discharge pipes associated with each of the Units.

Comment B33: The monitoring order of the stations for total residual chlorine should be specified and the Board should required total residual chlorine monitoring at stations N2 and F3.

Response B33: The revised tentative MRP requires concurrent sampling of total residual chlorine at the intake and discharge locations. In addition, two receiving water monitoring stations in the discharge channel will also be sampled for total residual chlorine. This will enable comparison of ambient total residual chlorine in south San Diego Bay with effluent concentrations.

Comment B34: The Board should require additional seasonal, quarterly benthic invertebrate sampling within and outside the thermal plume including stations F3 and N2.

Response B34: See Response to Comment B8.

Specific Comments on Fact Sheet

Comment B35: **The monitoring requirement for bar rack approach velocity was in Order No. 96-05 but has been eliminated in the tentative Order. The Board should require that the bar rack approach velocity be measured monthly at the lowest predicted tide for the month.**

Response B35: Pursuant to Section B of MRP No. 96-05, the discharger was required to annually measure bar rack approach velocity and sediment accumulation at the intake structure and submit an annual summary describing any operational difficulties at the intake structure or the bar rack. Order No. 96-05 indicates that this monitoring requirement may be deleted if the discharger demonstrates to the satisfaction of the Regional Board that no substantive changes in bar rack approach velocity and sediment accumulation have occurred since monitoring was initiated and the likelihood of future changes is remote.

Bar rack approach velocity and sediment accumulation data for 1996 to 1999 were evaluated for significant changes over the four-year period using regression analysis. Three out of the four intake structures showed no significant changes in sediment accumulation or approach velocity for the four-year period. One structure showed a decreasing trend in accumulation and approach velocity. Based on these results the bar rack approach velocity and sediment accumulation monitoring requirements were not included in the tentative MRP.

Comment B36: **The Bay Council requests that the informative details on the description of Cooling Water and Associated Discharges from the previous version of the tentative Order (i.e. No. 2001-283) be added to this tentative Order.**

Response B36: The NPDES permit renewal application submitted by Duke Energy in May 2001 contains an extensive description of each component of the cooling water system at SBPP. The information contained in the application is part of the record and is available for public review. In the interest of brevity, the Fact Sheet focuses on the components of the cooling water system that contribute to waste heat, add pollutants to the discharge, or impact the marine resources of the Bay (including condensers, chlorination system, intake structures etc.)

Comment B37: **The Bay Council request that the Order provide a full description of the chlorination system including the injection schedule for each four-hour cycle and the number of cycles per day for continuous plant operation. We also request that the Fact Sheet provide injection duration times for 1, 2, 3, and 4 units continuously on line.**

Response B37: The Fact Sheet (pp. 11, 12, and 43) to the revised tentative Order includes a more detailed description of the chlorination system at SBPP including injection times and number of cycles per day.

Comment B38: The simultaneous multi-unit chlorination is not justified. Pursuant to 40 CFR 423.13 the total residual chlorine may not be discharged from any unit for more than two hours per day and may only discharge chlorine from one unit at a time unless the utility can justify to the permit issuing authority that a particular location can not operate at or below this limit. Prohibition 9 in the tentative Order allows simultaneous multi-unit chlorination. The Bay Council request that the Order explain this apparent discrepancy and justify the need for the simultaneous multi-unit chlorination.

Response B38: The revised tentative Order prohibits the simultaneous chlorination of multiple Units at SBPP (see Prohibition 9 of revised tentative Order).

Comment B39: To determine the entrainment losses, Bay Council request that the Fact Sheet provide data demonstrating exposure times for the entrained biota in the cooling system.

Response B39: The tentative Order requires Duke Energy to submit a *Comprehensive Demonstration Study* pursuant to the CWA Section 316(b) *Phase II* rule no later than 30 months after adoption of the Order. Duke Energy is also required to submit a *Proposal for Information Collection* prior to submittal of the *Comprehensive Demonstration Study*. The *Proposal for Information Collection* as required by Section 125.95(b)(1) of the rule will be due no later than 12 months after adoption of the Order. As part of the *Proposal for Information Collection*, Duke Energy will be required to submit an updated sampling plan for any new field studies it proposes to conduct in order to ensure that there is sufficient data to develop a scientifically valid estimate of impingement mortality and entrainment at the site. The estimated exposure times for entrained biota in the cooling water system will be addressed as part of the sampling plan.

Comment B40: The tentative Order should provide full disclosure of the conditions for which the regression equation for residual chlorine was derived.

Response B40: The regression equation for total residual chlorine was agreed upon during settlement negotiations for Order No. 96-05 between the SWRCB, SDG&E, and the Environmental Health Coalition (EHC) in 1997. The total chlorine residual equation was subsequently adopted in Addendum No. 3 to Order No. 96-05 (in October 1998). The regression equation was derived from empirical methods that evaluate the effects of varying chlorine concentrations and time of exposure on the marine species and organisms in the San Diego Bay. Addendum No. 3 does not provide more details regarding the regression equation.

Comment B41: **Bay Council requests that measurements that determine the cross section area as a function of water depth (including tidal variation) at the discharge monitoring location, S2, should be given and where the monitoring point is located. In addition, Bay Council requests that a scaled drawing showing the discharge pipes and location of the discharge compliance point should be provided.**

Response B41: See Response to Comment B26.

C. First Letter from USEPA, Region 9, dated August 18, 2004

Comment C1: **Finding No. 18, page 3**
Finding No. 18 of the tentative Order states that the 2003 Section 316(b) study conducted by Duke Energy "demonstrated compliance with the requirements of the rule (prevailing in 2003)." Similar references are also found in the Fact Sheet on pages 3 and 24. This statement is incorrect, as no Section 316(b) rule existed prior to the rule adopted in February 2004. This language should be deleted from the permit.

Response C1: The Regional Board concurs with this comment. The 2003 study was based on USEPA guidance and not on a promulgated rule. The Best Technology Available (BTA) for minimization of entrainment and impingement impacts at the SPBPP does not meet the requirements of the new CWA Section 316(b) *Phase II rule.* The Finding related to Section 316(b) compliance has been modified in the revised tentative Order to state that the SBPP fails to fully comply with the new CWA Section 316(b) *Phase II rule*. The Fact Sheet has also been modified to reflect this change.

Comment C2: **Comprehensive Demonstration Study**
The tentative Order allows the discharger nearly four years to complete the *Comprehensive Demonstration Study* (Study) under Section 316(b). Because it appears that the 2003 impingement and entrainment study contains some of the information that will be required for the Study, we recommend the Regional Board shorten the timeframe for the discharger to complete the Study. Alternatively, the permit could be written to provide for a process for the Regional Board and discharger to negotiate a due date after submittal of the *Proposal for Information Collection*.

Response C2: The Regional Board concurs with USEPA that it is appropriate to shorten the time need to submit the Study. The revised tentative Order shortens the time allowed for Duke Energy to complete the Study from 42 months to 30 months after adoption of the Order. Furthermore, the revised tentative Order also shortens the time allowed for Duke Energy to submit a *Proposal for Information Collection* from 18 months to 12 months after adoption of the Order.

Comment C3: **Section 316(b) Best Technology Available Cost Amortization**
Page 26 of the Fact Sheet discusses the findings and conclusions of the 2003 Section 316(b) compliance studies regarding costs and benefits of alternative technologies. The study report apparently uses a 5-year plant life amortization. Because 5-years is not typically used for amortization calculations, if this assumption is used to demonstrate compliance with the Section 316(b) *Phase II rule*, the basis for this assumption should be documented. Additionally, we recommend that

a standard amortization analysis (15 or 20 years) should also be prepared.

Response C3: The Regional Board concurs with this comment. The Fact Sheet has been modified to state that amortization calculations for purposes of determining cost feasibility of technological upgrades of intake structures at the SBPP (to be addressed in the *Comprehensive Demonstration Study* of the *Phase II rule*) shall be based on a 20-year plant life.

Comment C4: **<u>Additional Studies to address Restoration Measures</u>**
USEPA recommends that an additional special study be conducted to determine specific restoration measures that could be accomplished to address thermal, entrainment, and impingement impacts. If Duke Energy makes definitive plans to close the facility, the Regional Board and the discharger may wish to focus their efforts on restoration rather than physical plant upgrades. Opportunities may be available for this discharger to contribute to the health of the San Diego National Wildlife Refuge, and to work toward implementation of the San Diego Bay Integrated Natural Resources Plan.

Response C4: The restoration measures recommended by USEPA should be addressed in the *Technology Installation and Operation Plan* and/or *Restoration Plan* of the *Comprehensive Demonstration Study*.

Duke Energy will be required to provide a *Technology Installation and Operation Plan* and/or *Restoration Plan* etc. with proposed implementation schedules, as part of its *Comprehensive Demonstration Study* for compliance with the CWA Section 316(b) *Phase II rule* (due no later than 30 months after adoption of the Order). If Duke Energy decides to implement a *Restoration Plan*, it would have to propose specific measures to restore the quantities of fish and shellfish in south San Diego Bay to levels that offset entrainment and impingement losses. During implementation of the *Restoration Plan*, Duke Energy would have to consider issues related to the San Diego National Wildlife Refuge (South Bay Unit) and work closely with the Department of Fish and Game, U.S. Fish and Wildlife Service and other agencies that manage the resources of south San Diego Bay.

D. Letter from California Department of Fish and Game dated August 31, 2004

Comment D1: **Effluent Temperature Compliance Point and Schedule**
The Department concurs with moving the temperature compliance point from the discharge channel to the property. However, the Department does not believe that providing five years for Duke Energy to come into compliance with the temperature limitation is warranted. The Department recommends the time schedule for compliance be significantly shortened and also recommends that the workplan be submitted within one year of adoption of the tentative Order and implementation of the workplan be initiated within three years of adoption.

Response D1: The Regional Board agrees with the request to require the workplan to be submitted within 12 months of adoption of the tentative Order. The final compliance date for monitoring temperature at the property line has been changed to three years after adoption of the Order. The revised tentative Order has addressed these changes.

Comment D2: **Effluent Temperature Mitigation**
The Department believes that adverse impacts that are a result of the thermal discharge from the South Bay Power Plant should be addressed through mitigation. The impacts are severe, both in scope and duration. The Department recommends that the discharger be required to develop and submit a workplan that will address these impacts through mitigation alternatives. This workplan should be submitted within one year of the adoption of the permit with the workplan beginning within three years of adoption.

Response D2: The revised tentative Order includes findings that acknowledge that measures to abate the detrimental impacts of the SBPP discharge to south San Diego Bay are needed. Furthermore, the Regional Board also recognizes that measures to restore the Beneficial Uses of south San Diego Bay and to rehabilitate the damage caused to the biological resources of the Bay from the operation of the power plant are also necessary.

In an action separate from the adoption of the tentative Order, the Regional Board will consider the issuance of a CWC Section 13267 letter to Duke Energy directing it to provide a workplan that proposes specific abatement and restoration measures. Duke Energy will be responsible for the financial costs associated with the implementation of the measures.

Comment D3: **Compliance with CWA Section 316 (b) Impingement and Entrainment Issues**
Department staff has concerns with the conclusions reached in the final Section 316(b) report provided by Duke Energy. The losses associated with impingement and entrainment are significant and have effects on source water populations.

The Department believes that the 2001-2003 316(a) and (b) studies have provided sufficient evidence that thermal, entrainment and impingement impacts are being realized. The next effort should be towards completing the components of the *Comprehensive Demonstration Study* (as required by the *Phase II* rule) that deal with technology alternatives and/or restoration/mitigation measures.

The discharger has indicated that their lease will end in 2009 and that they do not foresee operating the plant beyond the expiration date of their lease. It appears that restoration/mitigation measures are a more viable alternative for Duke Energy to comply with the *Phase II* rule.

The Department recommends that the draft permit be amended to require a concerted effort be made to develop the restoration aspect of the *Comprehensive Demonstration Study*. The Department further recommends that Duke submit the restoration measures component no later than two years after the adoption of the permit and initiation of the restoration measures no later than three years after adoption.

Response D3: The Regional Board concurs with the Department that the losses associated with impingement and entrainment at SBPP are significant.

Duke Energy will be required to provide a *Technology Installation and Operation Plan* and/or *Restoration Plan* etc. with proposed implementation schedules, as part of its *Comprehensive Demonstration Study* for compliance with the CWA Section 316(b) *Phase II rule*. The revised tentative Order requires submittal of the *Comprehensive Demonstration Study* no later than 30 months after adoption of the Order.

If Duke Energy decides to implement a *Restoration Plan*, it would have to propose specific measures to restore the quantities of fish and shellfish in south San Diego Bay to levels that offset entrainment and impingement losses. During implementation of the *Restoration Plan*, Duke Energy would have to consider issues related to the San Diego National Wildlife Refuge (South Bay Unit) and work closely with the Department of Fish and Game, U.S. Fish and Wildlife Service and other agencies that manage the resources of south San Diego Bay.

E. Letter from National Marine Fisheries Service dated August 31, 2004

Comment E1: **Mitigation Measures**

The Service is concerned about the entrainment losses in the SBPP cooling water system. The Service is also concerned about the redistribution of natural turbidity resulting in a significant reduction of eelgrass coverage in San Diego Bay. The Service recommends that the Regional Board require Duke Energy to finalize a mitigation plan (in consultation with other resource and regulatory agencies) to offset operational impacts of the power plant on the marine resources of San Diego Bay, within 12 months of the issuance of the renewal NPDES permit. Acceptable mitigation shall consist of in-kind replacement for the losses caused by operation of the power plant or acceptable implementation of elements of the Comprehensive Conservation Plan related to the restoration of the South San Diego Bay Unit of the National Wildlife Refuge.

Response E1: The revised tentative Order includes findings that acknowledge that measures to abate the detrimental impacts of the SBPP discharge to south San Diego Bay are needed. Furthermore, the Regional Board also recognizes that measures to restore the Beneficial Uses of south San Diego Bay and to rehabilitate the damage caused to the biological resources of the Bay from the operation of the power plant are also necessary.

The Regional Board intends to issue a CWC Section 13267 to Duke Energy directing it to provide a Workplan that proposes specific abatement and restoration measures. Duke Energy will be responsible for the financial costs associated with the implementation of the measures.

Duke Energy will be required to develop and implement the abatement and restoration Workplan in consultation with representatives of the USEPA, Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), RWQCB/SWRCB, and the California Coastal Commission.

F. Letter from California Independent System Operator (ISO) dated September 2, 2004

Comment F1: **Reliability Must-Run (RMR) Status of SBPP**
The SBPP is currently under a Reliability Must-Run (RMR) contract with the ISO and curtailing operations at the power plant may cause Duke Energy to violate its RMR contract. Furthermore, any reductions in SBPP's power generation output may directly impact the ability of the ISO controlled electric grid to meet the power needs of the San Diego area. The tentative Order needs to reflect the critical role of SBPP in providing energy to the San Diego area.

Response F1: The tentative Order includes findings that recognize the critical role of SBPP in providing energy to the San Diego area. The Regional Board also recognizes that SBPP would have to severely curtail operations in order to immediately comply with some of provisions of the tentative Order (including temperature and copper effluent limitations and compliance with CWA Section 316(b)). For this reason, the tentative Order provides Duke Energy with compliance schedules of up to three years to comply with some of the provisions of the tentative Order. This additional time will enable Duke Energy to modify its operations or take additional structural or control measures to comply with the final provisions of the Order.

G. Letter from Utility Consumers' Action Network (UCAN) dated September 3, 2004

Comment G1: **Mitigation Measures**
Duke Energy must be required to take operational actions to mitigate the environmental degradation caused to the Bay due to the SBPP discharge. Duke Energy must also be directed to provide monetary mitigation that might be used to offset the degradation of the Bay and/or prepare for a future Bay front power plant siting.

Response G1: See response to Comment H1.

H. Letter from California Lieutenant Governor Cruz Bustamante dated August 11, 2004

Comment H1: **General Comment**

The Regional Board should adopt a stringent permit for the SBPP that protects the water quality and ecosystem of San Diego Bay. Furthermore, the permit should clearly state that the impacts from the current plant should be significantly reduced, fully mitigated, and the health of the Bay should be restored.

Response H1: The tentative Order includes findings that acknowledge that measures to abate the detrimental impacts of the SBPP discharge to south San Diego Bay are needed. Furthermore, the Regional Board also recognizes that measures to restore the Beneficial Uses of south San Diego Bay and to rehabilitate the damage caused to the biological resources of the Bay from the operation of the power plant are also necessary.

The Regional Board intends to issue a CWC Section 13267 to Duke Energy directing it to provide a Workplan that proposes specific mitigation and restoration measures. Duke Energy will be responsible for the financial costs associated with the implementation of the mitigation and restoration measures.

I. Letter from City of San Diego Councilmember Donna Frye dated August 11, 2004

Comment I1: **General Comment**
The Regional Board should adopt a stringent permit and strongly consider the more detailed comments of the San Diego Bay Council.

Response I1: Comment noted.

J. Second Letter from Duke Energy dated September 15, 2004

Comment J1: **Implementation of new Effluent Limitations for Copper**
The tentative Order has new water-quality based effluent limitations (WQBEL) for copper that becomes effective immediately. Immediate compliance with the WQBEL is infeasible. A compliance schedule of up to 5 years should be allowed for Duke Energy to comply with the new WQBELs. Duke Energy should be provided the option of conducting additional ambient sampling for copper (if ambient levels of copper do exceed CTR criterion, WQBELs may not be required). Duke Energy would also like to evaluate the use of water-effect ratios or translator studies to develop WQBELs for copper that are achievable. Duke Energy should also be given the option to develop a site-specific water quality objective for copper.

Response J1: See response to Comment A1.

Comment J2: **Clean Water Act Section 316(a) Compliance and Relocation of the Compliance Monitoring Point for Temperature**
Duke Energy's technical experts have concluded that the thermal effects of the SBPP discharge do not violate the 'balanced indigenous community' standard for Section 316(a) and have not resulted in a degradation of beneficial uses. Duke also contends that moving the temperature compliance point from S1 to S2 (property line) appears to be driven by a foregone conclusion that the thermal effects of the plant violate the Balance Indigenous Communities (BIC) standard and represent an unacceptable degradation of beneficial uses. Duke Energy also contends that the relocation of the temperature compliance point to S2 should be based on a finding, supported by substantial evidence in the record, that the sampling conducted at S2 is representative of the cooling water discharge (as required by 40 CFR 122.41(j)(1).

Response J2: The 2003 studies conducted by Duke Energy clearly show impairment to the Beneficial Uses (listed in the Basin Plan) of the SBPP discharge channel and degradation of marine resources (including a lack of diversity in benthic invertebrates, absences of certain invertebrates, and loss of eelgrass habitat). The revised tentative Order and Fact Sheet state that Beneficial Uses of the discharge channel are not fully protected as required by the Basin Plan and Thermal Plan.

Any references to the violation of the BIC standard relative to the Section 316(a) rule have been removed (see *Errata Sheet* to the revised tentative Order). The revised tentative Order includes a Finding that states that the existing thermal discharge limitations (average daily Delta T = 15 degrees F and instantaneous maximum Delta T = 25 degrees F) applicable to the SBPP discharge are not more stringent then necessary for protection and propagation of a BIC (see *Errata Sheet* to the revised tentative Order).

The tentative Order requires Duke Energy to submit a Workplan that identifies the measures it will be taking in order to comply with its temperature effluent limitations at the property line. The Workplan would include any structural and/or operational measures Duke Energy will be taking to obtain representative temperature measurements at the property line.

Other issues related to Comment J2 are addressed in response to Comment A3.

Comment J3: **Clean Water Act Section 316(b) Compliance**

Duke Energy believes that the results of the recent Section 316(b) study demonstrates that the construction and operation of SBPP's cooling water intake structure represents Best Technology Available (BTA). The cost of retrofitting the power plant with new intake technology would be wholly disproportionate to the environmental benefits that would be gained (based on an amortization period of 5 years or even 20-30 years). Furthermore, the existing entrainment and impingement effects attributable to the cooling water intake structures at SBPP do not constitute an "adverse environmental impact".

Response J3: The Regional Board considers the larval and equivalent adult fish losses identified in the 2003 Section 316(b) study to be significant. The Department of Fish Game and the National Marine Fisheries Service have both indicated that the larval and equivalent adult fish losses are significant and would have an adverse impact on source water populations in south San Diego Bay.

It is clear that the SBPP does not meet the BTA standards for minimization of entrainment and impingement impacts as requirements by the CWA Section 316(b) *Phase II rule.* The Finding related to Section 316(b) compliance has been modified in the revised tentative Order to state that the SBPP fails to fully comply with the new CWA Section 316(b) *Phase II rule*. The Fact Sheet has also been modified to reflect this change.

Comment J4: **Dissolved Oxygen**

Duke Energy agrees with the Regional Boards determination that there is insufficient evidence to set an effluent limitation for dissolved oxygen and notes that the DO limitation in the Basin Plan applies to inland surface waters only.

Response J4: Comment noted.

Comment J5: **<u>Special Sunset Study</u>**
Based on guidance provided by the Regional Board at its September 8, 2004 hearing, Duke Energy understands that the NPDES renewal permit will not contain a requirement to perform a Special Sunset Study.

Response J5: The Regional Board agrees with the request to remove requirements of a Special Sunset Study. The revised tentative Order does not include requirements for a Special Sunset Study.

K. Second Letter from San Diego Bay Council (Bay Council) received on September 15, 2004

General Comments on Tentative Order

Comment K1: **Copper Effluent Limitations**
The Bay Council agrees with the Board's conclusion that CTR effluent limitations for copper are applicable to the SBPP discharge. The only way that SBPP can fully comply with its copper effluent limitations is by replacing its existing copper condenser tubing with alternative titanium or other alloy based tubing.

Response K1: Comment noted. The revised tentative Order includes a three-year time schedule for Duke Energy to comply with its CTR limitations for copper and Duke Energy will be required to develop and implement a workplan for source control, pollutant minimization, waste treatment, or other measures to control copper in its discharge.

Comment K2: **Temperature Compliance Point and Flow Measurement Method**
The Bay Council recommends that flow and effluent monitoring for all pollutants including temperature should be conducted at end of each discharge pipe associated with the four Units at SBPP (using flow meters and effluent sampling lines in each discharge pipe) instead of at the SBPP property line (Station S2). Effluent temperature of the combined discharge can be determined from the mass flow and temperature of each discharge pipe on a mass weighted basis.

Response K2: Comment noted. The workplan that Duke Energy is required to develop and implement would have to include the proposed measures it will be taking to obtain accurate and representative flows and temperature measurements at the property line. As part of the workplan, Duke Energy may propose to install flow meters at each discharge pipe and use modeling to obtain a representative combined temperature and flow value at the property line. Duke Energy would also have to provide engineering calculations for flow rates and measurements of associated parameters (such as property line cross section and specification of individual discharge pipes etc). The workplan would have to be reviewed and approved by the Regional Board prior to being implemented.

Comment K3: **Acute Toxicity – Temperature Impacts**
The Board should require that special toxicity tests be conducted at the maximum-recorded effluent temperatures to more accurately reflect true conditions in the SBPP discharge channel.

Response K3: The bioassay methods and protocols developed or approved by the EPA for toxicity testing require test water samples to adhere to specific laboratory conditions for temperature, dissolved oxygen, and other parameters. Pursuant to NPDES regulation, all test methods contained in

NPDES permits must conform with approved EPA protocols and methods, including 40 CFR 136. Currently there are no approved EPA protocols for elevated temperature toxicity monitoring in 40 CFR 136. If specific tests are developed and approved by the EPA in the future that address the effects of elevated temperatures on toxicity tests, the Regional Board may consider modifying the toxicity test methods in the Order.

Comment K4: **Appropriate Temperature Limitations**
The Regional Board should require that the delta T temperature requirements for the cooling water be replaced by monthly maximum discharge temperature requirements based on a report by Richard F. Ford, Ph.D.

Response K4: See Response to Comment B17.

Comment K5: **South San Diego Bay Unit of the National Wildlife Refuge (NWR)**
The Bay Council recommends that the Board contact U.S. Fish and Wildlife to resolve the issue of whether the expansion of the NWR will impact the permit for SBPP. The Bay Council believes that the presence of the NWR does not in any way change Duke's requirements and obligation to comply with applicable laws. Moreover, the presence of the NWR heightens the importance of adopting a permit that is truly protective of water quality and beneficial uses.

Response K5: As indicated in the Fact Sheet to the revised tentative Order, the USFWS notified the discharger (by letter dated May 5, 1998) that the proposed Refuge would have no negative effect on the operations and maintenance of the SBPP. This includes the use of San Diego Bay water for cooling purposes and any maintenance dredging of the intake and discharge channels of the power plant. The letter did not recommend any curtailment in power generation or modification to the volume or temperature of the SBPP discharge. The letter implied that the operations of the SBPP should not have detrimental impacts on goals and objectives of the Refuge.

Comment K6: **<u>Adoption of a Cease and Desist Order</u>**
The Bay Council has requested the Regional Board adopt a Cease and Desist Order (CDO) into the tentative Order. A CDO is an appropriate tool the Board can use to provide a time schedule to achieve full compliance for a discharger who cannot immediately comply with permit requirements. In the case of the copper CTR limits, a CDO would ensure that Duke will be allowed to continue to operate even though they cannot be in immediate compliance with its permit requirements, while setting a time schedule with achievable benchmarks to ensure compliance and imposing appropriate penalties if compliance is not attained.

Response K6: Comment noted. The Regional Board finds that it is appropriate to include a compliance schedule in the Order that provides Duke Energy three years to comply with its new copper effluent limitations (instead of a CDO).

L. Second Letter from USEPA, Region 9, dated September 29, 2004

Comment L1: **Comprehensive Demonstration Study**

The EPA understands that an updated *Comprehensive Demonstration Study* (Study) may be necessary for Duke Energy to fully comply with the new Section 316(b) *Phase II* rule. In the interim, the Regional Board should use best professional judgment (BPJ) to include provisions in this permit necessary to minimize adverse impacts, based on existing information. 40 CFR 125.95 requires an existing facility such as SBPP to submit the Study as expeditiously as practicable but not later than January 7, 2008. The EPA, however, encourages the Regional Board to require Duke Energy to submit the Study in less than four years, since the discharger has already completed certain components of the Study (as part of the 2003 Section 316(b) study conducted at the SBPP)

Response L1: The Regional Board concurs with USEPA that it is appropriate to require Duke Energy to submit a Study much earlier than the 40 CFR 125.95 deadline of January 7, 2008. The revised tentative Order requires Duke Energy to submit the Study no later than 30 months after adoption of the Order. The *Phase II* rule will require Duke Energy to take technological and/or restoration measures in order to comply with impingement and entrainment reduction performance standards of the rule. The discharger will be providing the Regional Board with *Technology Installation and Operation Plan* and/or *Restoration Plan* etc. with proposed implementation schedules as part of the Study. It is expected that the SBPP will fully implement these plans and demonstrate compliance with the *Phase II* rule performance standards during its subsequent 5-year NPDES permit cycle (i.e. 2009 – 2014).

It would not be feasible to require the power plant to make significant upgrades prior to the submittal of the Study. Therefore in the interim, it is appropriate for SBPP to continue operating in its current configuration (i.e. intake structures with traveling screens with debris removal system), based on BPJ.

The Regional Board's *Responses to Comments* for letters and documents received on ***revised version*** (i.e. version to be presented at the November 10, 2004 Regional Board meeting) of tentative Order No. R9-2004-0154 (Addressing Comment Letters M through P)

M. Letter from Duke Energy dated October 27, 2004

Comment M1: **Compliance Schedule for Copper Effluent Limitations**
Duke Energy appreciates the Regional Board's decision to include a compliance schedule in the tentative Order that provides Duke Energy additional time to comply with its new copper effluent limitations. Duke Energy would, however, like to request a 5-year compliance schedule instead of the 3-year schedule provided in the tentative Order.

Response M1: The shortened time-schedule of 3-years allowing Duke Energy to comply with the new copper effluent limitations was based on the Regional Board's direction expressed at the Board meeting on September 8, 2004. At this meeting, the Regional Board indicated that a 5-year time-schedule was too long a more expedited schedule was needed.

Comment M2: **Relocation of Thermal Effluent Limitations Compliance Point**
Duke Energy is willing to accept the provisions of the tentative Order that requires the thermal effluent limitations compliance point to be relocated to the SBPP property line no later than 36 months after adoption of the Order. However, if it is determined that a representative sample cannot feasibly be collected at the property line or that the relocation of the compliance point causes the plant to unduly restrict its generating capacity and compromising its RMR status, Duke Energy may seek an alternate resolution or additional time to comply with this requirement.

Duke Energy does not agree with the Regional Board's assessment that the thermal discharge is impacting the beneficial uses of the discharge channel. Duke Energy also believes that the permit findings relating to thermal effects (including Findings 14, 15, 16, 17, and 19) should be revised to conform more closely to the technical information that is included in the record. In particular, Duke Energy does not believe that the findings of non-compliance with Section 316(a), degradation of beneficial uses, or relating to mitigation for discharges over past 40 years are warranted or appropriate. Conforming changes to the Fact Sheet should also be made.

Response M2: The Regional Board has expressed the view poing that a three-year time-schedule provided to Duke Energy to relocate its thermal compliance monitoring point to the property line should provide enough time for Duke

Energy to make structural and/or operational changes to the SBPP to enable collection of representative effluent samples at the property line. A three-year time-schedule should also provide Duke Energy enough time to evaluate the RMR status of its Units and make necessary modifications to maintain their generating capacities.

The Findings in the revised tentative Order and Fact Sheet related to the thermal impacts of the SBPP discharge have been modified to present a more clear description of the discharge and its impact on Beneficial Uses. Any references to the violation of Section 316(a) rule have been removed (see *Errata Sheet* to the revised tentative Order).

Comment M3: **<u>Finding Related to CWA Section 316(b) Phase II Rule</u>**
Duke Energy has no objection in implementing the operative provisions of the tentative Order pertaining to the CWA Section 316(b) *Phase II* rule (including the requirement to conduct a *Comprehensive Demonstration Study*). Duke Energy would, however, like to request that the findings related to compliance with the *Phase II* rule be revised in the tentative Order to conform more closely with requirements applicable to federal law.

Response M3: The Finding in the revised tentative Order related to compliance with CWA Section 316(b) has been modified to reflect that the intake structures at SBPP fail to reflect Best Technology Available (BTA) for minimizing adverse environmental impacts based on the new *Phase II* rule (and not on the old USEPA guidance for implementation of CWA Section 316(b). (see *Errata Sheet* to the revised tentative Order).

Comment M4: **<u>Monitoring Requirements</u>**
Duke Energy has the following concerns regarding the provisions of the tentative Monitoring and Reporting Program (MRP):

a. Duke Energy does not believe that there is any basis to require continued monitoring for cadmium, lead, mercury, or silver, since these metals have not been detected in the discharge since 1996. Furthermore, the increased monitoring frequency for arsenic, chromium (III and VI), and zinc is unwarranted.

b. The tentative MRP requires DO monitoring at 12 receiving water stations dispersed throughout the Bay. The tentative Order also requires DO in the discharge. Since one of the receiving water stations (E7) is located at the same location as the SBPP discharge location (i.e. station S2, property line), the tentative Order appears to require redundant DO monitoring at the same location.

c. The requirement for monthly toxicity monitoring in the tentative Order needs to be reduced to quarterly monitoring

after one year (if there is no indication of toxicity during the first year).

d. The tentative Order also requires some monitoring to be performed to coincide with the period of the day when the power plant is operating at highest loads. Aside from thermal loading, no correlation can be made between the typical power plant generation cycle and the characteristics of the power plant discharge. Furthermore, sampling of the discharge is already limited to periods based on the tidal cycle. Adding additional temporal restrictions on sampling will only serve to create instances where Duke Energy is physically unable to collect discharge samples in the specified time period. Since they are not practical and add no value, these restrictions on sampling should be eliminated.

Response M4: The following items (a, b, c, and d) are in response to the items identified in the comment above:

a. See Response to Comment A5. Although certain metals including cadmium, lead, mercury, or silver have not been detected in the SBPP discharge in recent years, the monitoring for these pollutants under Order No. 96-05 has been sporadic and conducted only on a semiannual basis. The monitoring regime under Order No. 96-05 is inadequate in determining the reasonable potential of the power plant to discharge these metals. The Regional Board has determined that cadmium, lead, mercury, silver, and other priority metals need to be monitored monthly. This will enable a better characterization of metals in the SBPP discharge. Furthermore, this monitoring regime will provide data on the seasonal variation in the concentrations of these metals over an annual cycle.

b. The tentative Monitoring and Reporting Program (MRP) includes separate DO monitoring requirements of receiving water, discharge, and intake. The receiving water monitoring is required at 12 stations, including E7, on a monthly basis. The DO at these 12 receiving water stations is required to be measured during the same day.

Although the SBPP discharge monitoring location (station S2) coincides with receiving water monitoring station E7, the monthly discharge monitoring for DO at S2 is done in concert with intake water DO monitoring and is not designed to coincide with the receiving water monitoring program.

c. See Response to Comment A5

d. See Response to Comment A5

Comment M5: **<u>Effective Date of Order</u>**
Duke Energy requests that once adopted, the Monitoring and Reporting Program (MPR) become effective January 1, 2005 instead of 10 days after adoption (as is required for the NPDES permit itself). This will give the company extra time to make necessary arrangements with its contractors and laboratories to implement the expanded monitoring requirements proposed in the Order.

Response M5: The Regional Board has determined that the monitoring and reporting requirements will be effective upon the effective date of Order and that it is not necessary to grant Duke Energy additional time to implement the monitoring and reporting requirements of the Order.

N. Letter from San Diego Bay Council (Bay Council) dated October 27, 2004

Comment N1: **Appropriate Limitations for Temperature and Dissolved Oxygen**
The Regional Board should require that the delta T temperature requirements for the cooling water be replaced by monthly maximum discharge temperature requirements based on a report by Richard F. Ford, Ph.D. Furthermore the tentative Order should also include the numerical Dissolved Oxygen (DO) limitations recommended by Dr. Ford.

Response: See Responses to Comments B11 and B17.

Comment N2: **The Regional Board has the responsibility to protect water quality, not ensure the performance of energy contracts**
The Bay Council believes that it is the Regional Board's responsibility to enforce the federal and state water quality laws. The fact that Duke Energy may violate its energy contracts or status as an RMR facility should not impact the ability of the Regional Board to insert new discharge requirements (including temperature and DO) into the tentative Order.

Response N2: Comment noted.

Comment N3: **Adoption of a Cease and Desist Order**
The Bay Council has requested the Regional Board adopt a Cease and Desist Order (CDO) into the tentative Order. A CDO is an appropriate tool the Board can use to provide a time schedule to achieve full compliance for a discharger who cannot immediately comply with permit requirements while setting a reasonable time schedule to achieve compliance and imposing appropriate penalties if compliance is not attained.

Response N3: Comment noted. See Response to Comment K6.

Comment N4: **Adoption of State Ocean Plan limitations for Total Residual Chlorine**
The Board should adopt the SWRCB Ocean Plan method for setting the total residual chlorine limitation to be used, as it is more protective of the aquatic life. The limitation for total residual chlorine in the tentative Order is not fully protective of the beneficial uses of the Bay.

Response N4: See Response to Comment B18.

O. Letter from San Diego Gas & Electric, dated October 25, 2004

Comment O1: **Relocation of Thermal Effluent Limitations Compliance Point**

The requirement of the tentative Order for Duke Energy to relocate its thermal effluent limitations compliance point to the SBPP property line is not warranted. This relocation will directly impact the ISO's ability to rely upon the generating capacity of SBPP for maintaining SDG&E's electric system reliability.

While the proposed relocation of the compliance point change is intended to improve beneficial uses, the may actually have the opposite affect. When it becomes possible for the ISO to remove some of SBPP's Units from their RMR status (which would have taken them out of service), the impact on the SBPP from relocating the compliance point may cause the power plant to curtail its operations and reduce overall energy out put. This could force the ISO to continue to keep more Units online and delay removal of their RMR status.

If the Regional Board finds it necessary to relocate the compliance point to property line in order for the power plant to comply with NPDES regulations, the Delta T limitations should be proportionately increased.

Response O1: Comment Noted. A three-year time-schedule for Duke Energy to relocate its thermal compliance monitoring point to the property line should provide enough time for Duke Energy to evaluate the RMR status of its Units and make necessary modifications to maintain their generating capacities.

Comment O2: **Compliance Schedule for Copper Effluent Limitations**

The three year time-schedule for Duke Energy to comply with its new copper effluent limitations is too short. The time-schedule needs to be extended to the expiration date of the Order. This will provide enough time for the ISO to determine which Units at the SBPP can be removed from service and allow Duke Energy enough time to take appropriate control and/or operation measures for reduction of copper in its discharge.

Response O2: See Response to Comment M1.

Comment O3 : **CWA Section 316(b) Compliance**

The tentative Order requires Duke Energy to conduct a feasibility analysis of technological upgrades to reduce impingement and entrainment losses (as part of the Comprehensive Demonstration Study for compliance with the CWA Section 316(b) *Phase II* rule). The tentative Order requires Duke Energy to use a long term (i.e. 20-year) amortization period to determine the cost-effectiveness of technological upgrades. SDG&E feels that a 20-year amortization period is unrealistic since the remaining plant life is much less than this time frame. SDG&E

recommends that the Regional Board should use a more realistic time period to conduct a cost feasibility analysis of technological upgrades of the SBPP Units.

Response O3: The 20-year amortization schedule was recommended by the USEPA (see Comment C3). Pursuant to the CWA Section 316(b) *Phase II rule* Duke Energy will be required to implement technological upgrades and/or restoration measures at the SBPP in order to comply with the rule. Duke Energy will be required to provide a *Technology Installation and Operation Plan* and/or *Restoration Plan* etc. with proposed implementation schedules, as part of its *Comprehensive Demonstration Study* for compliance with the *Phase II rule*.

If Duke Energy determines that technological upgrades to the power plant are not cost effective, it may consider implementing a *Restoration Plan.* The *Restoration Plan* would have to propose specific measures to restore the quantities of fish and shellfish in south San Diego Bay to levels that offset entrainment and impingement losses.

P. Letter from San Diego Unified Port District (Port), dated October 27, 2004

Comment P1: **The letter clarifies the role of the Port and Duke Energy with respect to the SBPP and provides details (projected development schedules and description) of a replacement power plant that may be constructed at the SBPP site. The letter does not comment on the provisions of the tentative Order.**

Response P1: Comments noted.